

## MEGASONIC PROBE ENERGY DIRECTOR

### Abstract of the Disclosure

A megasonic cleaning apparatus configured to provide effective cleaning of a substrate without causing damage to the substrate is provided. The apparatus includes a megasonic probe, a transducer configured to energize the probe, and a heat transfer element disposed between the transducer and the probe. The heat transfer element may be configured to direct the sonic energy from the transducer toward specific areas of the probe so as to reduce the effect of normal-incident waves relative to shallow-angle waves. Alternatively, a rear end face of the probe may be configured for this purpose. Another embodiment provides a coupler disposed between the heat transfer element and the rear end face of the probe for directing the sonic energy from the transducer toward specific areas of the probe.

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